ORDER NO. MTNC020101A1
B5

Service Manual

Simplified

Color Television

Simplified Manual
(NA7DM)

Panasonic

Models	Chassis
CT-27G7DF	**JP363**
CT-27G7DUF	**JP363**
CT-27G7SDF	**JP363**
CT-27G7SDUF	**JP363**

This simplified service manual is issued to add listed models to the main service manual, order No. **MTNC010306C1 (CT-27G6E);** Models CT-27G7DF/DUF are similar to CT-27G6E. A full set of schematics, unique settings, and a complete parts list are included in this simplified manual**.**
Please file and use this simplified service manual together with main service manual, order No. **MTNC010306C1.**

"**WARNING!** This Service Manual is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. **Products powered by electricity should be serviced or repaired only by experienced professional technicians.** Any attempt to service or repair the product or products dealt with in this Service Manual by anyone else could result in serious injury or death."

The service technician is required to read and follow the "**Safety Precautions**" and "**Important Safety Notice**" in this Manual.

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Panasonic Quasar

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Important Safety Notice

Special components are used in this television set which are important for safety. These parts are identified on the schematic diagram by the symbol ⚠ and printed in **BOLD TYPE** on the replacement part list. It is essential that these critical parts are replaced with the manufacturer's specified replacement part to prevent X-ray radiation, shock, fire or other hazards. Do not modify the original design without the manufacturer's permission.

Safety Precautions

General Guidelines

An **Isolation Transformer** should always be used during the servicing of a receiver whose chassis is not isolated from AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect the receiver from being damaged by accidental shorting that may occur during servicing.

When servicing, observe the original lead dress, especially in the high voltage circuit. Replace all damaged parts (also parts that show signs of overheating.)

Always replace protective devices, such as fishpaper, isolation resistors and capacitors, and shields after servicing the receiver. Use only manufacturer's recommended rating for fuses, circuits breakers, etc.

High potentials are present when this receiver is operating. Operation of the receiver without the rear cover introduces danger for electrical shock. Servicing should not be performed by anyone who is not thoroughly familiar with the necessary precautions when servicing high-voltage equipment.

Extreme care should be practiced when **handling the picture tube**. Rough handling may cause it to implode due to atmospheric pressure. (14.7 lbs per sq. in.). Do not nick or scratch the glass or subject it to any undue pressure. When handling, use safety goggles and heavy gloves for protection. **Discharge the picture tube** by shorting the anode to chassis ground (not to the cabinet or to other mounting hardware). When discharging connect cold ground (i.e. dag ground lead) to the anode with a well insulated wire or use a grounding probe.

Avoid prolonged exposure at close range to unshielded areas of the picture tube to prevent exposure to x-ray radiation.

The **Test Picture Tube** used for servicing the chassis at the bench should incorporate safety glass and magnetic shielding. The safety glass provide shielding for the tube viewing area against x-ray radiation as well as implosion. The magnetic shield limits the x-ray radiation around the bell of the picture tube in addition to the restricting magnetic effects. When using a picture tube test jig for service, ensure that the jig is capable of handling **50kV** without causing x-ray radiation.

Before returning a serviced Receiver to the owner, the service technician must thoroughly test the unit to ensure that is completely safe to operate. **Do not use a line isolation transformer when testing.**

Leakage Current Cold Check

Unplug the AC cord and connect a jumper between the two plug prongs.

Measure the resistance between the jumpered AC plug and expose metallic parts such as screwheads, antenna terminals, control shafts, etc. If the exposed metallic part has a return path to the chassis, the reading should be between 240kΩ and 5.2MΩ. If the exposed metallic part does not have a return path to the chassis, the reading should be infinite.

Leakage Current Hot Check (Fig. 1)

Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during the check.

Connect a 1.5kΩ 10 watt resistor in parallel with a 0.15µF capacitor between an exposed metallic part and ground. Use earth ground, for example a water pipe.

Using a DVM with a 1000 ohms/volt sensitivity or higher, measure the AC potential across the resistor.

Repeat the procedure and measure the voltage present with all other exposed metallic parts.

Verify that any potential does not exceed 0.75 volt RMS. A leakage current tester (such a Simpson model 229, Sencore Model PR57 or equivalent) may be used in the above procedure, in which case any current measure must not exceed 0.5 milliamp. If any measurement is out of the specified limits, there is a possibility of a shock hazard and the receiver must be repaired and rechecked before it is returned to the customer.

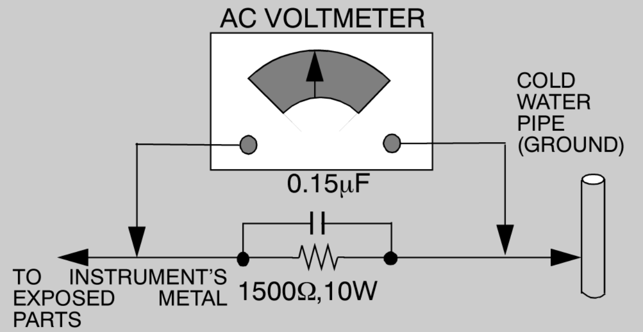

Figure 1. Hot Check Circuit

X-ray Radiation

WARNING: The potential source of x-ray radiation in the receiver is in the High Voltage section and the picture tube. Refer to "X-ray Protection Circuit Check & Adjustments" on page 5 to confirm HHS voltage.

High Voltage (CRT Anode)

Set the **brightness, picture, sharpness** and **color** controls to minimum (to obtain dark image). Measure the High Voltage. The high voltage should be **29.25kV ± 1.25kV**. If the upper limit is out of tolerance, immediate service and correction is required.

Note: *It is important to use an accurate, calibrated high voltage meter.*

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Service Notes

Note: *Some components may be affixed with glue. Be careful not to break or damage foil under the component or at the pins of the ICs when removing. Usually applying heat to the component for a short time while twisting with tweezers will break the component loose.*

Leadless Chip Component

(surface mount)

Chip components must be replaced with identical chips due to critical foil track spacing. There are no holes in the board to mount standard transistors or diodes. Some chips capacitor or resistor board solder pads may have holes through the board, however the hole diameter limits standard resistor replacement to 1/8 watt. Standard capacitor may also be limited for the same reason. It is recommended that identical components be used.

Chip resistor have a three digit numerical resistance code - 1st and 2nd significant digits and a multiplier. Example: 162 = 1600 or 1.6kΩ resistor, 0 = 0Ω (jumper).

Chip capacitors generally do not have the value indicated on the capacitor. The color of the component indicates the general range of the capacitance.

Chip transistors are identified by a two letter code. The first letter indicates the type and the second letter, the grade of transistor.

Chip diodes have a two letter identification code as per the code chart and are a dual diode pack with either common anode or common cathode. Check the parts list for correct diode number.

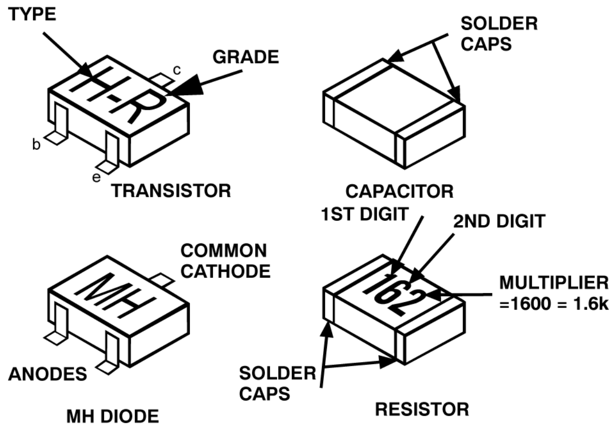
Component Removal

1. Use solder wick to remove solder from component end caps or terminal.
2. Without pulling up, carefully twist the component with tweezers to break the adhesive.
3. Do not reuse removed leadless or chip components since they are subject to stress fracture during removal.

Chip Component Installation

1. Put a small amount of solder on the board soldering pads.
2. Hold the chip component against the soldering pads with tweezers or with a miniature alligator clip and apply heat to the pad area with a 30 watt iron until solder flows. Do not apply heat for more than 3 seconds.

Chip Components

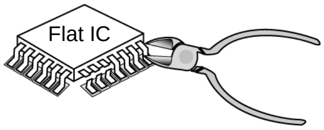


How to Replace Flat-IC

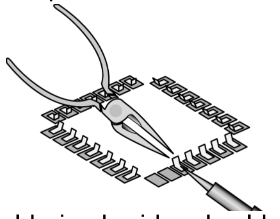
- Required Tools -

- Soldering iron
- Needle nose pliers
- Wire cutters (sharp & small)
- De-solder braids
- Magnifier

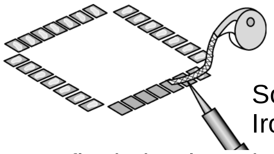
1. Cut the pins of a defective IC with wire cutters. Remove IC from board. If IC is glued to the board, heat the IC and release the IC. See Note above.



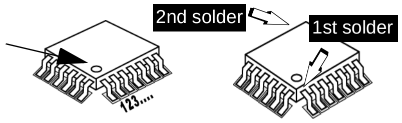
2. Using soldering iron and needle nose pliers remove the IC pins from the board.



3. Using de-soldering braid and soldering iron remove solder from affected are on board (pads).

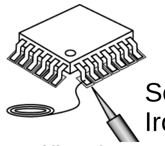


4. Position the new flat-ic in place (apply the pins of the flat-ic to the soldering pads where the pins need to be soldered). Determine the positions of the soldering pads and pins by correctly aligning the polarity symbol. Solder pin #1 first, align the IC.

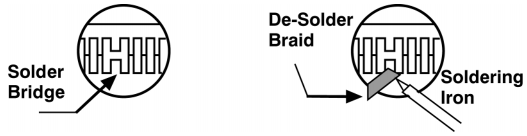


Solder the pin opposite to pin #1. This will assist positioning the IC.

5. Solder all pins to the soldering pads using a fine tipped soldering iron.



6. Check with a magnifier for solder bridge between the pins or for dry joint between pins and soldering pads. To remove a solder bridge, use a de-solder braid as shown in the figure below.



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IMPORTANT: To protect against possible damage to the solid state devices due to arcing or static discharge, make certain that all ground wires and CRT DAG wire are securely connected.

CAUTION: The power supply circuit is above earth ground and the chassis cannot be polarized. Use an isolation transformer when servicing the receiver to avoid damage to the test equipment or to the chassis. Connect the test equipment to the proper ground (⏚) or (⏊) when servicing, or incorrect voltages will be measured.

WARNING: This receiver has been designed to meet or exceed applicable safety and x-ray radiation protection as specified by government agencies and independent testing laboratories.

To maintain original product safety design standards relative to x-ray radiation and shock and fire hazard, parts indicated with the symbol ⚠ on the schematic must be replaced with identical parts. Order parts from the manufacturer's parts center using the parts numbers shown in this service manual, or provide the chassis number and the part reference number.

For optimum performance and reliability, all other parts should be replaced with components of identical specification.

X-ray Protection Circuit Check & Adjustments

This test must be performed as final check before the receiver is returned to the customer. If voltages are out of tolerance, immediate service and correction is required to insure safe operation and to prevent the possibility of premature component failure.

Equipment:

1. Isolation transformer.
2. High voltage meter.
3. Short jumper.
4. Jumper diode (same as D823, PN S3L60P154004). diode should be rated a minimum of 150V.

Procedure:

1. Connect the receiver to an isolation transformer. turn receiver ON.
2. Apply a monoscope pattern.
3. In service mode (see service mode section in this manual) select register C0B.
4. Measure TP5 (located near the tuner). Compare the measured value to the left column of the table below. Set C0B with value from the right column corresponding to the measured level at TP5. Example, if the measured level at TP5 is 1.03V, set C0B to 03.

TP5 MEASUREMENT	SET C0B TO (HEX)
0 ~ 0.93V	00
0.93 ~ 0.97V	01
0.97 ~ 1.01V	02
1.01 ~ 1.05V	03
1.05 ~ 1.09V	04
1.09 ~ 1.13V	05
1.13 ~ 1.17V	06
1.17 ~ 1.21V	07

5. Exit service mode and shut the TV OFF.
6. Connect the short jumper between TPD16 and TPD17.
7. Connect the jumper diode between TPD14 and TPD15 (cathode connected to TPD14, anode connected to TPD15, see Fig. 3 for locations).
8. Apply 75VAC to the input of the isolation transformer.
9. Turn receiver ON.
10. Set PICTURE and BRIGHTNESS to minimum.
11. Slowly increase the voltage at the input of the isolation transformer and confirm HHS voltage measure **35.0KV** when the receiver starts to go out of sync.
12. Turn receiver OFF and remove jumper & diode.

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Receiver Feature Table

FEATURE / MODEL	ALL MODELS
Chassis	JP363
No. of channels	181
Menu language	Eng/Span/Fr
Closed Caption	X
V-Chip (USA/CANADA)	X
75 Ω input	X
Remote model number	EUR501450
Picture tube	M68LGL061X
Panablack tube	X
Comb filter	2 Dig
V/A norm	V
MTS/SAP/DBX	X
AI Sound	X
Built-in audio power	1.5W x 2 (10%)
Number of speakers	2
A/V in (rear/front)	1 (1 / 1)
S-VHS input (rear/front)	1/0
Headphone jack	X
Dimensions (WxDxH) mm in	665.2 x 545 x 594.8 26.2 x 21.5 x 23.4
Weight (kg/lbs)	35 / 77.2
Power source (V/Hz)	120 / 60
Anode voltage	29.25kV ± 1.25kV
Video input jack	$1V_{p\text{-}p}$ 75Ω, phono jack
Audio input jack	500mV RMS 47kΩ
A-Board TNP2AH040	BH*
C-Board TNP2AA106	AG*

Table 1. **Receiver Features**

Specifications are subject to change without notice or obligation.
Dimensions and weights are approximate.

* **Note:** *When ordering a replacement board assembly, append an "S" next to the board number.*
Example: to order the A-Board for CT-27G7DF, the replacement board is **TNP2AH040BHS**.

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Location of Receiver Controls

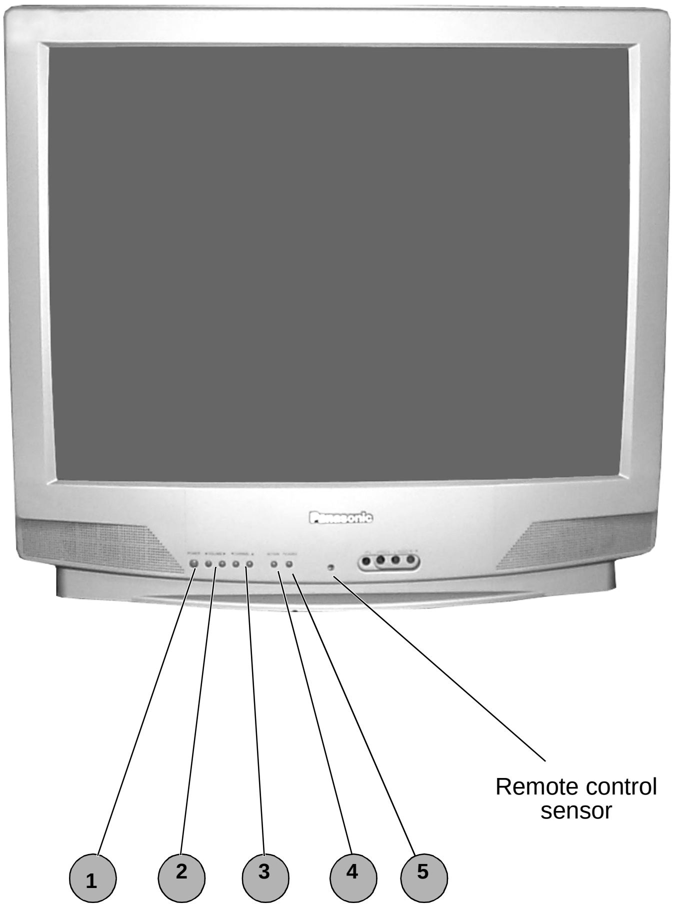

Figure 2. Location of controls

Quick reference control operation	
1	**Power button -** Press to turn ON or OFF.
2	**Volume buttons -** Press to adjust sound level, or to adjust audio menus, video menus, and select operating features when menus are displayed
3	**Channel buttons -** Press to select programmed channels. Press to highlight desired features when menus are displayed. Also use to select cable converter box channels after programming remote control infra-red codes (the TV/AUX/CABLE switch must be set in CABLE position).
4	**Action button -** Press to display main menu and access on screen feature and adjustment menus.
5	**TV/Video button -** Press to select TV or video input.

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Chassis View

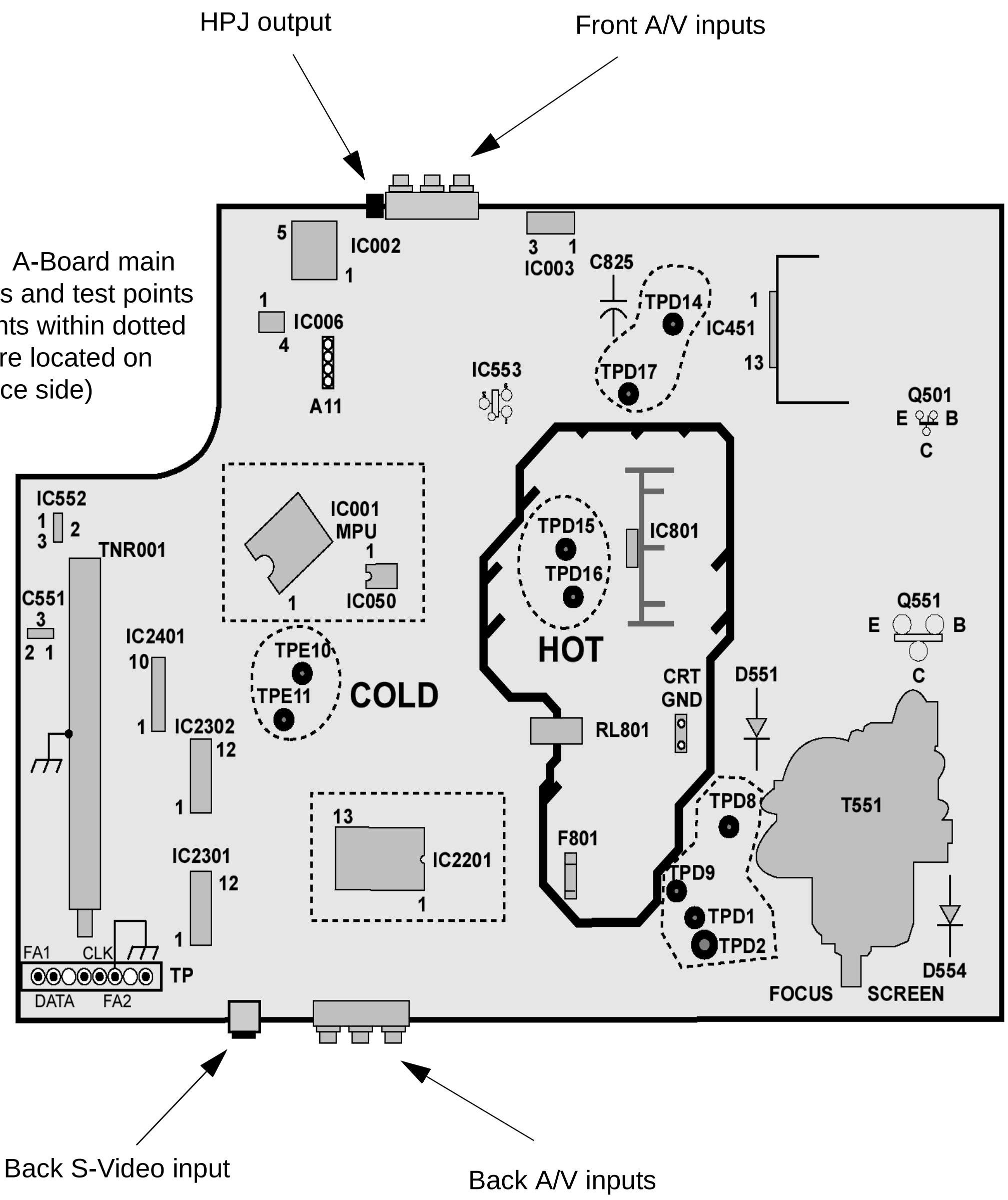

Figure 3. A-Board main components and test points (components within dotted areas are located on trace side)

Figure 4. Chassis view

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REPLACEMENT PARTS LIST

Models: CT-27G7DF, CT-27G7DUF, CT-27G7SDF & CT-27G7SDUF

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
	CAPACITORS	
C001	**TCJ2VF1H103Z**	**CAP,C .01UF-Z-50V**
C002	TCJ2VB1H471K	CAP,C 470PF-K-50V
C003	ECA1HM4R7B	CAP,E 4.7UF-50V
C004	TCJ2VC1H150J	CAP,C 15PF-J-50V
C005	TCJ2VC1H150J	CAP,C 15PF-J-50V
C008	TCJ2VF1H104Z	CAP,C .1UF-Z-50V
C009	ECA1AM470B	CAP,E 47UF-10V
C010	TCJ2VF1H104Z	CAP,C .1UF-Z-50V
C011	ECA1AM101B	CAP,E 100UF-10V
C015	ECJ2VB1C224K	CAP,C .22UF-K-16V
C016	TCJ2VC1H101J	CAP,C 100PF-J-50V
C017	TCJ2VB1C104K	CAP,C .1UF-K-16V
C018	TCJ2VC1H151J	CAP,C 150PF-J-50V
C020	TCJ2VB1C104K	CAP,C .1UF-K-16V
C022	TCJ2VC1H101J	CAP,C 100PF-J-50V
C023	TCJ2VC1H151J	CAP,C 150PF-J-50V
C024	ECA1AM470B	CAP,E 47UF-10V
C025	TCJ2VB1C104K	CAP,C .1UF-K-16V
C026	TCJ2VB1C104K	CAP,C .1UF-K-16V
C027	TCJ2VF1H104Z	CAP,C .1UF-Z-50V
C028	TCJ2VB1C104K	CAP,C .1UF-K-16V
C029	ECQB1H333JF3	CAP,P .033UF-J-50V
C031	ECA1HMR22B	CAP,E .22UF-50V
C032	ECA1AM470B	CAP,E 47UF-10V
C033	TCJ2VC1H390J	CAP,C 39PF-J-50V
C034	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C035	ECA1HM010B	CAP,E 1UF-50V
C036	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C037	ECA1HM0R1B	CAP,E 0.1UF/50V
C038	ECA1AM470B	CAP,E 47UF-10V
C040	ECA1AM470B	CAP,E 47UF-10V
C041	ECA1HM2R2B	CAP,E 2.2UF-50V
C042	TCJ2VF1H104Z	CAP,C .1UF-Z-50V
C043	ECA1AM470B	CAP,E 47UF-10V
C044	TCJ2VC1H471J	CAP,C 470PF-J-50V
C045	ECA1HM0R1B	CAP,E 0.1UF/50V
C046	TCJ2VB1C104K	CAP,C .1UF-K-16V
C047	TCJ2VC1H220J	CAP,C 22PF-J-50V
C048	TCJ2VC1H220J	CAP,C 22PF-J-50V
C050	ECA1AM101B	CAP,E 100UF-10V
C051	TCJ2VF1H104Z	CAP,C .1UF-Z-50V
C055	TCJ2VC1H560J	CAP,C 56PF-J-50V
C103	ECA0JM331B	CAP,E 330UF-6.3V
C104	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C105	ECA0JM101B	CAP,E 100UF-6.3V
C350	ECA1CM101B	CAP,E 100UF/16V
C351	TCJ2VB1H391K	CAP,C 390PF-K-50V
C352	TCJ2VB1H391K	CAP,C 390PF-K-50V
C353	TCJ2VB1H471K	CAP,C 470PF-K-50V
C354	ECKW3D102KBN	CAP,C .001UF-K-2KVDC

REF NO.	PART NO.	DESCRIPTION
C357	EEANA1E1R0B	CAP,E 1.0UF-25V
C361	TCJ2VC1H151J	CAP,C 150PF-J-50V
C362	TCJ2VC1H151J	CAP,C 150PF-J-50V
C363	TCJ2VC1H151J	CAP,C 150PF-J-50V
C451	ECA1CHG470B	CAP,E 47UF-16V
C452	ECSF1EE105VB	CAP,E 1.0UF-25V
C453	ECEA1HFS010B	CAP,E 1UF-50V
C454	ECA1EM102E	CAP,E 1000UF-25V
C455	ECA1VHG101B	CAP,E 100UF-35V
C456	ECQB1H103JF3	CAP,P .01UF-J-50V
C459	ECA1VHG471B	CAP,E 470UF-35V
C462	ECA1HM4R7B	CAP,E 4.7UF-50V
C502	TCJ2VC1H471J	CAP,C 470PF-J-50V
C503	TCJ2VB1C104K	CAP,C .1UF-K-16V
C504	TCJ2VB1C104K	CAP,C .1UF-K-16V
C510	ECCR2H100D5	CAP,C 10PF-D-500V
C511	ECKR2H821KB5	CAP,C 820PF-K-500V
C512	ECKR2H101KB5	CAP,C 100UF-K-500V
C531	**ECA1EM220B**	**CAP,E 22UF-25V**
C551	**ECA1VM331B**	**CAP,E 330UF-35V**
C554	ECKR2H561KB5	CAP,C 560PF-K-500V
C555	**ECA2EM220E**	**CAP,E 22UF-250V**
C556	**ECA1CM471B**	**CAP,E 470UF-16V**
C557	ECKR2H102KB5	CAP,C 1000PF-K-500V
C560	**ECEA1HN010UB**	**CAP,E 1UF/50V**
C561	ECKR2H561KB5	CAP,C 560PF-K-500V
C563	**ECWH12H822JS**	**CAP,P .0082UF-J-1.2KV**
C564	**ECWH12H562JS**	**CAP,P .0056UF-J-1.2KV**
C565	**ECKW3D181JBP**	**CAP,C 180PF-J-2KV**
C566	**ECKW3D181JBP**	**CAP,C 180PF-J-2KV**
C568	**ECWF2274JBB**	**CAP,M .27UF-J-200V**
C569	**ECWF2474JBB**	**CAP,M .24UF-J-200V**
C570	ECA1CM222E	CAP,E 2200UF-16V
C571	ECA1EM220B	CAP,E 22UF-25V
C572	ECA1CM100B	CAP,E 10UF-16V
C573	ECA1CM101B	CAP,E 100UF/16V
C575	ECA0JM222B	CAP,E 2200UF-6.3V
C577	ECA1CM101B	CAP,E 100UF/16V
C578	ECA0JM332B	CAP,E 3300PF-6.3V
C579	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C580	ECKR2H152KB5	CAP,C .0015UF-K-500V
C605	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C606	ECA0JM221B	CAP,E 220UF-6.3V
C801	**ECKWAE472ZED**	**CAP,C 4700PF-Z-500V**
C802	**ECKWAE472ZED**	**CAP,C 4700PF-Z-500V**
C803	**ECKWAE472ZED**	**CAP,C 4700PF-Z-500V**
C805	**EC0S2DA331BB**	**CAP,E 330UF/200V**
C806	ECQM4103KZW	CAP,P .01UF-K-400V
C807	ECKR3A821KBP	CAP,C 820PF-K-1KV
C808	ECA1VM101B	CAP,E 100UF-35V
C809	ECKR1H101KB5	CAP,C 100PF-K-50V

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REPLACEMENT PARTS LIST

Models: CT-27G7DF, CT-27G7DUF, CT-27G7SDF & CT-27G7SDUF

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
C810	ECKR1H471KB5	CAP,C 470PF-K-50V
C812	**ECQU2A224MVA**	**CAP,P .22UF-M-250VAC**
C813	**ECQU2A153MVA**	**CAP,P .015UF-M-250VAC**
C814	**ECQU2A153MVA**	**CAP,P .015UF-M-250VAC**
C820	ECA1CM101B	CAP,E 100UF/16V
C821	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C822	ECKR3A221KBP	CAP,C 220PF-K-1KV
C823	**ECA1VM471E**	**CAP,E 470UF-35V**
C824	ECKR3A471KBP	CAP,C 470PF-K-1KV
C825	**EEUMG2C221S**	**CAP,E 220UF-160V**
C826	ECKR3A471KBP	CAP,C 470PF-K-1KV
C827	ECA1CM221B	CAP,E 10UF-16V
C828	**ECA160V33UE**	**CAP,E 33UF/160V**
C2201	ECA1HM4R7B	CAP,E 4.7UF-50V
C2202	ECA1HM2R2B	CAP,E 2.2UF-50V
C2203	ECA1HM4R7B	CAP,E 4.7UF-50V
C2204	AP106K016CAE	CAP,T 10UF/16V
C2205	ECA1HMR33B	CAP,E .33UF-50V
C2206	ECQB1H223JF3	CAP,P .022UF-J-50V
C2207	AP335K016CAE	CAP,T 3.3UF/16V
C2208	TCJ2VB1C104K	CAP,C .1UF-K-16V
C2209	TCJ2VB1C104K	CAP,C .1UF-K-16V
C2210	TCJ2VB1C104K	CAP,C .1UF-K-16V
C2212	ECQB1H473JF3	CAP,P .047UF-J-50V
C2213	ECA1HMR47B	CAP,E .47UF-50V
C2214	ECA1AM101B	CAP,E 100UF-10V
C2215	EEANA1E100B	CAP,E 10UF-25V
C2216	TCJ2VC1H100D	CAP,C 10PF-J-50V
C2301	ECA1EM102E	CAP,E 1000UF-25V
C2302	ECEA1HN010UB	CAP,E 1UF/50V
C2303	ECA1EM101B	CAP,E 100UF-25V
C2304	ECA1CM100B	CAP,E 10UF-16V
C2307	ECA1CM102B	CAP,E 1000UF/16V
C2311	ECA1EM102E	CAP,E 1000UF-25V
C2312	ECEA1HN010UB	CAP,E 1UF/50V
C2313	ECA1EM101B	CAP,E 100UF-25V
C2314	ECA1CM100B	CAP,E 10UF-16V
C2317	ECA1CM102B	CAP,E 1000UF/16V
C2320	ECA1CM100B	CAP,E 10UF-16V
C2330	ECA1CM100B	CAP,E 10UF-16V
C2350	ECA1HM4R7B	CAP,E 4.7UF-50V
C3001	ECA1HM0R1B	CAP,E 0.1UF/50V
C3012	ECA1HM010B	CAP,E 1UF-50V
C3018	ECA1HM010B	CAP,E 1UF-50V
C3050	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C3051	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
	DIODES	
D002	MA165TA5VT	DIODE, SWITCHING
D006	MA4330HTA	DIODE
D052	MA4068MTA	DIODE, ZENER
D053	MA4056MTA	DIODE
D055	MA4056MTA	DIODE
D451	ERA15-01V3	DIODE, RECTIFIER
D452	MA4047MTA	DIODE
D453	MA165TA5VT	DIODE, SWITCHING
D454	MA165TA5VT	DIODE, SWITCHING
D502	MA4047MTA	DIODE
D531	**AS01V0**	**DIODE**
D551	**D1NL20UV70**	**DIODE**
D554	**AU02V0**	**DIODE**
D558	RS3FS	DIODE
D559	BYD33G-113	DIODE
D561	**AU02V0**	**DIODE**
D571	MA165TA5VT	DIODE, SWITCHING
D606	MA165TA5VT	DIODE, SWITCHING
D607	MA152KTX	DIODE
D608	MA152KTX	DIODE
D609	MA152KTX	DIODE
D801	**D3SBA60-4103**	**DIODE**
D806	**TAP4GA0006**	**DIODE**
D808	SARS01V1	DIODE
D809	AG01V0	DIODE
D810	AG01V0	DIODE
D811	AG01V0	DIODE
D812	**MA4068MTA**	**DIODE, ZENER**
D820	MA165TA5VT	DIODE, SWITCHING
D821	MA4047HTA	DIODE
D822	RN1ZLF-B1	DIODE
D823	**S3L60P154004**	**DIODE**
D824	D1NL20UV70	DIODE
D2350	MA4068MTA	DIODE, ZENER
D2351	MA165TA5VT	DIODE, SWITCHING
D2352	MA165TA5VT	DIODE, SWITCHING
D2353	MA165TA5VT	DIODE, SWITCHING
D2354	MA4091MTA	DIODE
D3001	MA3110MTX	DIODE, ZENER
D3003	MA3110MTX	DIODE, ZENER
D3004	MA3110MTX	DIODE, ZENER
D3005	MA3110MTX	DIODE, ZENER
D3006	MA3110MTX	DIODE, ZENER
D3017	MA3110MTX	DIODE, ZENER
D3018	MA3110MTX	DIODE, ZENER
D3019	MA3110MTX	DIODE, ZENER
D3020	MA3110MTX	DIODE, ZENER
D3021	MA3110MTX	DIODE, ZENER
D3022	MA3110MTX	DIODE, ZENER
	FUSES	
F801	**XBA2A00101**	**FUSE 6.3A 125V**
	INTEGRATED CIRCUITS	
IC001	**M65580MAP103**	**MPU/VCJ**
IC002	C3EAFC000011	EEPROM
IC003	PIC-37042SR	REMOTE SENSOR

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REPLACEMENT PARTS LIST

Models: CT-27G7DF, CT-27G7DUF, CT-27G7SDF & CT-27G7SDUF

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
IC005	PQ1X331M2ZP	3.3 V REGULATOR
IC006	MN1280R	RESET
IC050	TC74HC4066AL	HALF TONE (OSD)
IC451	**LA7838**	**V. OUT**
IC551	AN78M09LB	9V REGULATOR
IC552	**AN78M05LB**	**PLUS 5V AVR**
IC553	**AN78M05LB**	**PLUS 5V AVR**
IC801	**STRG5624A**	**VCO (POWER SUPPLY)**
IC2201	AN5829S-E1V	MTS , S-AGC
IC2301	AN17800A	AUDIO OUT AMP
IC2302	AN17800A	AUDIO OUT AMP
	COILS	
L001	EXCELSA35T	FERRITE BEAD
L003	TLUABTA2R2K	COIL, PEAKING 2.2UH
L004	TLUABTA2R2K	COIL, PEAKING 2.2UH
L005	EXCELDR35V	FERRITE BEAD
L006	EXCELSA24T	FERRITE BEAD
L007	EXCELDR35V	FERRITE BEAD
L008	TLUABTA470K	COIL, PEAKING 47UH
L009	EXCELSA35V	FERRITE BEAD
L010	ELESN330JA	COIL, PEAKING 33UH
L011	ELESN330JA	COIL, PEAKING 33UH
L013	EXCELDR35V	FERRITE BEAD
L014	ELESN180KA	COIL, PEAKING 18UH
L016	EXCELSA35V	FERRITE BEAD
L017	TLUABTA100K	COIL, PEAKING 10UH
L018	TLUABTA150K	COIL, PEAKING 15UH
L019	EXCELDR35V	FERRITE BEAD
L090	EXCELSA24T	FERRITE BEAD
L104	TLUABTA2R2K	COIL, PEAKING 2.2UH
L108	EXCELSA35V	FERRITE BEAD
L238	EXCELSA39V	FERRITE BEAD
L245	EXCELSA35V	FERRITE BEAD
L250	EXCELSA35V	FERRITE BEAD
L306	TLUABTA2R2K	COIL, PEAKING 2.2UH
L325	EXCELSA35V	FERRITE BEAD
L351	TLTABT101K	COIL, PEAKING
L403	TLUABTA2R2K	COIL, PEAKING 2.2UH
L416	EXCELSA39V	FERRITE BEAD
L551	**ELH5L7103**	**COIL**
L801	**ELF20N020A**	**COIL, 2UH**
L802	TALL08T470KA	LINE FILTER
L803	TALL08T680KA	LINE FILTER
L805	TALL08T220KA	TRANSFORMER, LINE FILTER
L2305	EXCELSA35V	FERRITE BEAD
L2350	ELESN4R7JA	COIL, PEAKING 4.7UH
	TRANSISTORS	
Q001	2SD601ARTX	TRANSISTOR
Q006	2SB709ARTX	TRANSISTOR
Q007	2SB709ARTX	TRANSISTOR
Q008	2SB709ARTX	TRANSISTOR

REF NO.	PART NO.	DESCRIPTION
Q009	2SC1473A	TRANSISTOR
Q050	2SB709ARTX	TRANSISTOR
Q051	2SB709ARTX	TRANSISTOR
Q052	2SB709ARTX	TRANSISTOR
Q053	2SD601ARTX	TRANSISTOR
Q054	2SD601ARTX	TRANSISTOR
Q055	2SD601ARTX	TRANSISTOR
Q090	2SB709ARTX	TRANSISTOR
Q092	2SB709ARTX	TRANSISTOR
Q351	2SC3063RL	TRANSISTOR
Q352	2SC3063RL	TRANSISTOR
Q353	2SC3063RL	TRANSISTOR
Q354	2SD601ARTX	TRANSISTOR
Q355	2SD601ARTX	TRANSISTOR
Q356	2SD601ARTX	TRANSISTOR
Q451	2SD601ARTX	TRANSISTOR
Q452	2SD601ARTX	TRANSISTOR
Q453	2SD601ARTX	TRANSISTOR
Q501	2SC4212HLB	TRANSISTOR
Q505	2SD601ARTX	TRANSISTOR
Q520	2SD601ARTX	TRANSISTOR
Q551	**2SC5339LBMA1**	**TRANSISTOR**
Q605	2SB709ARTX	TRANSISTOR
Q606	2SD601ARTX	TRANSISTOR
Q820	2SA1767QTA	TRANSISTOR
Q830	2SB1011QRL	TRANSISTOR
Q2350	2SB709ARTX	TRANSISTOR
	RELAYS	
RL801	**TSEH0005**	**RELAY**
	RESISTORS	
R001	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R003	ERJ6GEYJ105V	RES,M 1M-J-1/10W
R004	ERJ6GEYJ562V	RES,M 5.6K-J-1/10W
R006	ERDS2TJ101T	RES,C 100-J-1/4W
R007	ERJ6GEYJ471V	RES,M 470-J-1/10W
R008	ERJ6GEYJ471V	RES,M 470-J-1/10W
R009	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W
R010	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W
R011	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W
R012	ERJ6GEYJ473V	RES,M 47K-J-1/10W
R013	ERJ6GEYJ202V	RES,M 2K-J-1/10W
R014	ERJ6GEYJ221V	RES,M 220-J-1/10W
R015	ERJ6GEYJ221V	RES,M 220-J-1/10W
R016	ERJ6GEYJ221V	RES,M 220-J-1/10W
R017	ERJ6GEYJ681V	RES,M 680-J-1/10W
R018	ERJ6GEYJ681V	RES,M 680-J-1/10W
R019	ERJ6GEYJ681V	RES,M 680-J-1/10W
R021	ERJ6GEYJ101V	RES,M 100-J-1/10W
R022	ERJ6GEYJ101V	RES,M 100-J-1/10W
R023	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R024	ERJ6GEYJ153V	RES,M 15K-J-1/10W

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REPLACEMENT PARTS LIST

Models: CT-27G7DF, CT-27G7DUF, CT-27G7SDF & CT-27G7SDUF

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
R028	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W
R029	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W
R032	ERJ6ENF1002V	RES,M 10K-F-1/10W
R033	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W
R034	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W
R035	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W
R036	ERJ6GEYJ562V	RES,M 5.6K-J-1/10W
R037	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R038	ERJ6GEYJ223V	RES,M 22K-J-1/10W
R039	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R040	ERJ6GEYJ223V	RES,M 22K-J-1/10W
R041	ERJ6GEYJ153V	RES,M 15K-J-1/10W
R042	ERJ6GEYJ392V	RES,M 3.9K-J-1/10W
R044	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R045	ERJ6GEYJ101V	RES,M 100-J-1/10W
R046	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R062	ERJ6GEYJ122V	RES,M 1.2K-J-1/10W
R063	ERJ6GEYJ122V	RES,M 1.2K-J-1/10W
R064	ERJ6GEYJ122V	RES,M 1.2K-J-1/10W
R065	ERJ6GEYJ272V	RES,M 2.7K-J-1/10W
R066	ERJ6GEYJ272V	RES,M 2.7K-J-1/10W
R067	ERJ6GEYJ272V	RES,M 2.7K-J-1/10W
R068	ERJ6GEYJ182V	RES,M 1.8K-J-1/10W
R069	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W
R070	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R071	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R072	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R078	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R081	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R090	ERJ6GEYJ471V	RES,M 470-J-1/10W
R091	ERJ6GEYJ185V	RES,M 1.8MEG-J-1/10W
R092	ERJ6GEYJ473V	RES,M 47K-J-1/10W
R093	ERJ6GEYJ331V	RES,M 330-J-1/10W
R202	ERJ6GEYJ751V	RES,M 750-J-1/10W
R351	ERG2FJ123H	RES,M 12K-J-2W
R352	ERG2FJ123H	RES,M 12K-J-2W
R353	ERG2FJ123H	RES,M 12K-J-2W
R354	ERDS1TJ272T	RES,C 2.7K-J-1/2W
R355	ERDS1TJ272T	RES,C 2.7K-J-1/2W
R356	ERDS1TJ272T	RES,C 2.7K-J-1/2W
R357	ERJ6ENF5100V	RES,M 510-F-1/10W
R358	ERJ6ENF5100V	RES,M 510-F-1/10W
R359	ERJ6ENF5100V	RES,M 510-F-1/10W
R360	ERJ6ENF4700V	RES,M 470-F-1/10W
R361	ERJ6ENF4700V	RES,M 470-F-1/10W
R362	ERJ6ENF4700V	RES,M 470-F-1/10W
R363	ERJ6GEYJ101V	RES,M 100-J-1/10W
R364	ERJ6GEYJ101V	RES,M 100-J-1/10W
R365	ERJ6GEYJ101V	RES,M 100-J-1/10W
R381	ERJ6GEYJ101V	RES,M 100-J-1/10W
R382	ERJ6GEYJ101V	RES,M 100-J-1/10W
R383	ERJ6GEYJ101V	RES,M 100-J-1/10W
R384	ERJ6ENF2701V	RES,M 2.7K-F-1/10W
R385	ERJ6ENF4421V	RES,M 4.42K-F-1/10W
R386	ERJ6ENF1201V	RES,M 1.2K-F-1/10W
R387	ERJ6ENF2701V	RES,M 2.7K-F-1/10W
R388	ERJ6ENF4421V	RES,M 4.42K-F-1/10W
R389	ERJ6ENF1201V	RES,M 1.2K-F-1/10W
R390	ERJ6ENF2701V	RES,M 2.7K-F-1/10W
R391	ERJ6ENF4421V	RES,M 4.42K-F-1/10W
R392	ERJ6ENF1201V	RES,M 1.2K-F-1/10W
R451	ERDS1FJ1R0P	RES,C 1.0-J-1/2W
R454	ERJ6GEYJ473V	RES,M 47K-J-1/10W
R455	ERJ6GEYJ183V	RES,M 18K-J-1/10W
R456	ERJ6GEYJ223V	RES,M 22K-J-1/10W
R457	ERJ6GEYJ182V	RES,M 1.8K-J-1/10W
R458	ERJ6GEYJ333V	RES,M 33K-J-1/10W
R459	ERJ6GEYJ683V	RES,M 68K-J-1/10W
R460	ERDS2TJ102T	RES,C 1K-J-1/4W
R462	ERJ6GEYJ473V	RES,M 47K-J-1/10W
R463	ERJ6GEYJ473V	RES,M 47K-J-1/10W
R465	ERJ6GEYJ183V	RES,M 18K-J-1/10W
R466	ERJ6GEYJ683V	RES,M 68K-J-1/10W
R467	ERJ6GEYJ104V	RES,M 100K-J-1/10W
R468	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R469	ERJ6GEYJ220V	RES,M 22-J-1/10W
R471	ERJ6GEYJ223V	RES,M 22K-J-1/10W
R472	ERJ6GEYJ473V	RES,M 47K-J-1/10W
R475	ERJ6GEYJ471V	RES,M 470-J-1/10W
R502	ERJ6GEYJ562V	RES,M 5.6K-J-1/10W
R504	ERDS2TJ681T	RES,C 680-J-1/4W
R505	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W
R506	ERJ6GEYJ333V	RES,M 33K-J-1/10W
R507	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R508	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R510	**ERG3FJ182**	**RES,M 1.8K-J-3W**
R511	**ERG3FJ182**	**RES,M 1.8K-J-3W**
R512	ERG2FJ392H	RES,M 3.9K-J-2W
R520	ERJ6GEYJ331V	RES,M 330-J-1/10W
R521	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R531	**ERD25FJ470P**	**RES,C 47-J-1/4W**
R532	**ERJ6ENF1002V**	**RES,M 10K-F-1/10W**
R533	**ERJ6ENF1781V**	**RES,M 1.78K-F-1/10W**
R551	**ERDS1FJ1R0T**	**RES,C 1.0-J-1/2W**
R552	**ERDS1FJ1R0T**	**RES,C 1.0-J-1/2W**
R556	ERG1SJ221P	RES,M 220-J-1W
R557	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R558	**ERQ1CKPR56S**	**RES,F .56-K-1W**
R559	ERG2FJ683H	RES,M 12K-J-2W
R561	ERG2FJ102H	RES,M 1K-J-2W
R562	ERG3FJ680H	RES,M 68-J-3W
R563	ERG1SJ150P	RES,M 15-J-1W

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REPLACEMENT PARTS LIST

Models: CT-27G7DF, CT-27G7DUF, CT-27G7SDF & CT-27G7SDUF

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
R572	ERJ6GEYJ152V	RES,M 1.5K-J-1/10W
R605	ERDS2TJ103T	RES,C 10K-J-1/4W
R606	ERJ6GEYJ562V	RES,M 5.6K-J-1/10W
R607	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R608	ERJ6GEYJ104V	RES,M 100K-J-1/10W
R801	**ERF7ZK1R5**	**RES,W 1.5-K-7W**
R802	ERDS2TJ684T	RES,C 680K-J-1/4W
R803	ERG2FJ100H	RES,M 10K-J-1/2W
R804	ERG2FJ104H	RES,M 100K-J-2W
R805	**ERX2FZJR18H**	**RES,M .18-J-2W**
R806	**ERX2FJR56H**	**RES,M .56-J-2W**
R807	ERDS2TJ681T	RES,C 680-J-1/4W
R808	ERDS2TJ4R7T	RES,C 4.7-J-1/4W
R809	ERDS2TJ472T	RES,C 4.7K-J-1/4
R815	**ERC12ZGM825D**	**RES,S 8.2MEG-M-1/2**
R821	ERDS1FJ1R0T	RES,C 1.0-J-1/2W
R822	ERDS1FJ1R0T	RES,C 1.0-J-1/2W
R823	ERDS1FJ272T	RES,C 2.7K-J-1/2W
R824	ERDS2TJ223T	RES,C 22K-J-1/4W
R825	ERDS2TJ272T	RES,C 2.7K-J-1/4W
R828	ERJ6GEYJ104V	RES,M 100K-J-1/10W
R830	ERDS2TJ104T	RES,C 100K-J-1/4W
R831	ERDS2TJ682T	RES,C 6.8K-J-1/4W
R850	**ERQ12HJR56P**	**RES,F .56-J-1/2W**
R2201	ERJ6GEYJ224V	RES,M 220K-J-1/10W
R2203	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R2204	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R2205	ERJ6GEYJ101V	RES,M 100-J-1/10W
R2206	ERJ6GEYJ273V	RES,M 27K-J-1/10W
R2301	ERQ2CJP3R9S	RES,F 3.9-J-2W
R2307	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R2350	ERDS2TJ391T	RES,C 390-J-1/4W
R2351	ERJ6GEYJ562V	RES,M 5.6K-J-1/10W
R2352	ERJ6GEYJ683V	RES,M 68K-J-1/10W
R2353	ERJ6GEYJ124V	RES,M 120K-J-1/10W
R2354	ERJ6GEYJ123V	RES,M 12K-J-1/10W
R2355	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W
R2356	ERJ6GEYJ101V	RES,M 100-J-1/10W
R2357	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W
R2365	ERDS2TJ102T	RES,C 1K-J-1/4W
R2370	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R3001	ERDS2TJ101T	RES,C 100-J-1/4W
R3005	ERJ6GEYJ334V	RES,M 330K-J-1/10W
R3007	ERJ6GEYJ151V	RES,M 150-J-1/10W
R3008	ERJ6GEYJ151V	RES,M 150-J-1/10W
R3009	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W
R3010	ERJ6GEYJ334V	RES,M 330K-J-1/10W
R3011	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W
R3013	ERJ6ENF75R0V	RES,M 75.0-F-1/10W
R3014	ERJ6ENF75R0V	RES,M 75.0-F-1/10W
R3016	ERDS2TJ181T	RES,C 180-J-1/4W

REF NO.	PART NO.	DESCRIPTION
R3017	ERDS2TJ181T	RES,C 180-J-1/4W
R3018	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W
R3019	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W
R3050	ERJ6GEYJ101V	RES,M 100-J-1/10W
R3051	ERJ6GEYJ101V	RES,M 100-J-1/10W
		SWITCHES
S001	EVQPF106K	SWITCH
S002	EVQPF106K	SWITCH
S003	EVQPF106K	SWITCH
S004	EVQPF106K	SWITCH
S005	EVQPF106K	SWITCH
S008	EVQPF106K	SWITCH
S009	EVQPF106K	SWITCH
		TRANSFORMERS
T501	**TLH15452**	**TRANSFORMER, HORIZONTAL DRIVER**
T551	**KFT4AA348F2**	**TRANSFORMER, FLYBACK**
T801	**ETS35AA5E3NC**	**TRANSFORMER**
		CRYSTALS / FILTERS
X001	TSSA092	CRYSTAL OSCILLATOR
X002	AF080005BE	CRYSTAL
		OTHERS
TNR001	**ENG36604GR**	**TUNER**
M001	**TSX2AA0281**	**A/C LINE CORD**
M002	**M68LGL061X**	**CRT 27"**
M003	**TJSC00300**	**CRT SOCKET**
DY	**TLY2AA006**	**DEFLECTION YOKE**
DEG	**TLK2AA0011**	**COIL, DEGAUSSING**
M004	0FMK014ZZ	CONVERGENCE CORRECTOR STRIP
M005	TMM2A30702	WEDGE, YOKE
M006	JH291U-009	YOKE, CONVERGENCE
M007	TXF3A01ZERA	ASSY. DAG GND
JK3001	TJB2A9064B	JACK A/V
M08	EAS12D123JD3	SPEAKER 16 OHM, 3W
M09	TMW2A97121	STRAIN RELIEF: AC LINE CORD
M010	TBM2A10141	BADGE, PANASONIC
M011	TBX2AA1701GS	BUTTON, 7-KEY
M012	TKX2AA00401	IR GUIDE
M013	TXFKY01FSER	ASSY, CABINET FRONT (CT-27G7DF, CT-27G7DUF) (2) Pad Foam, Label Service Information, (2) Felt, IR Guide
M014	TXFKY04FSER	ASSY, CABINET FRONT (CT-27G7SDF, CT-27G7SDUF) (2) Pad Foam, Label Service Information, (2) Felt, IR Guide
M015	TXFKU01FSER	ASSY, CABINET BACK Cabinet Back, (2) Label X-Ray Warning, (2) Label, Felt
JK3002	TJB2AA0046	TERMINAL, FRONT A/V
JK3003	TJB2AA0171	TERMINAL, S-VHS
		ACCESORIES
M016	TQB2AA0431	MANUAL, OWNERS
M0017	EUR501450	REMOTE CONTROL
M0018	UR50EC1190A	BATTERY COVER, REMOTE CONTROL

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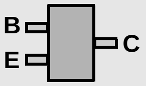
Schematic Notes

IMPORTANT SAFETY NOTICE

THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES THAT ARE IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS DESIGNATED WITH A ⚠ IN THE SCHEMATIC.

CHIP TRANSISTOR LEAD DESIGNATION



SCHEMATIC NOTES

1. Resistors are carbon 1/4W unless noted otherwise.
2. Capacitors are ceramic 50V unless noted otherwise.
3. Coil value notes is inductance in µH.
4. Test point indicated by ⫯ ; Test point but no pin ⫯.
5. Components indicated with ⚠ are critical parts and replacement should be made with manufacture specified replacement parts only.
6. ▬ (**BOLD LINE**) indicates the route of B+ supply.
7. The schematic diagrams are current at the time of printing and are subject to change without notice.
8. Ground symbol ⏚ indicates **HOT GROUND CONNECTION**; ⏚ indicates COLD GROUND.

NOTE: All other component symbols are used for engineering design purposes.

VOLTAGE MEASUREMENTS

1. Voltage measurement:
   - AC input to the Receiver is 120V. NTSC (HD, 1125i & 525P when applicable) signal generator is connected to the antenna of the Receiver. (Color bar pattern of 100 IRE white and 7.5 IRE black.)
   - All Picture and Audio adjustments are set to Normalize.
     TV ANT/CABLE - (Set-Up Menu) in TV/ANT Mode
     Volume - Min.
     TV/Video SW - TV position
     Audio Mode - Stereo
   - Voltage readings are nominal and may vary ±10% on active devices. Some voltage reading will vary with signal strength and picture content.
   - Supply voltages are nominal.
2. Ground symbol ⏚ indicates ground lead connection of meter.
   Incorrect ground connection will result in erroneous readings.

CAUTION: ***Incorrect ground connection of the test equipment will result in erroneous readings.***

WAVEFORM MEASUREMENTS

1. ③ indicates waveform measurement. (Measurement can be taken at the best accessible location in common to the indicated point.)
2. Taken with an NTSC signal generator connected to the antenna terminal. (NTSC color bar pattern of 8 bars of EIA colors, 100 IRE white and 7.5 IRE black.)
3. Customer Controls (Picture/Audio Menu) are set to Normalize. Volume is set to “MIN”.
4. All video and color waveforms are taken with a wideband scope and a probe with low capacitance (10 to 1). Shape and peak altitudes may vary depending on the type of Oscilloscope used and its settings.
5. Ground symbol ⏚ shown on waveform number indicates (Hot) ground lead connection of the Oscilloscope.

CAUTION: Incorrect ground connection of the test equipment will result in erroneous readings.

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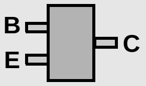
Schematic Notes

NOTA DE SEGURIDAD

LOS DIAGRAMAS ELÉCTRICOS INCLUYEN CARACTERÍSTICAS ESPECIALES MUY IMPORTANTES PARA LA PROTECCIÓN CONTRA RAYOS-X, QUEMADURAS Y DESCARGAS ELÉCTRICAS. CUANDO SE DE SERVICIO ES IMPORTANTE USAR PARA REEMPLAZO DE COMPONENTES CRITICOS, SOLO PARTES ESPECIFICADAS POR EL FABRICANTES. LOS COMPONENTES CRITICOS ESTAN SEÑALADOS EN LOS DIAGRAMAS POR EL SIMBOLO ⚠.

IDENTIFICACIÓN DE TERMINALES PARA TRANSISTORES EN *CHIP*



NOTAS DE LOS DIAGRAMAS

1. Las Resistencias son de Carbón de 1/4W, a menos que se indique otra característica.
2. Los Capacitores son de Cerámica para 50V, a menos que se indique otra característica.
3. El valor indicado de las Bobinas es la inductancia expresada en µH.
4. Los puntos de prueba en la terminal de algún componente son indicados por . Los puntos de prueba fuera de los componentes se indican con .
5. Los componentes señalados con el símbolo ⚠ son considerados componentes críticos y deben ser reemplazados sólo con las partes especificadas por el fabricante.
6. (**LINEA GRUESA**) indica las líneas de alimentación de los Voltajes B+.
7. Los diagramas eléctricos están sujetos a cambio sin previo aviso.
8. El símbolo indica que es una conexión a **Tierra Caliente** y el símbolo indica conexión a **Tierra Fría**.

NOTA: Los demas símbolos de componentes incluidos son usados con fines de diseño.

MEDICIÓN DE VOLTAJES

1. Medición de voltaje:
   - El voltaje de entrada al Receptor es de 120V de Corriente Alterna. Un generador de patrones con formato NTSC se conecta a la entrada de la antena. (Patrón de Barras de Colores con 100 IREs para el Blanco y 7.5 IREs para el Negro.)
   - Los ajustes de los Menus Picture y Audio se normalizan.
     En el Menú Set-Up, en la opción ANTENA, se selecciona el modo de CABLE.
     El nivel de Volumen se minimiza.
     De los modos TV y Video, seleccionar el modo TV.
     Seleccionar modo Estereo del Audio.
   - Las mediciones de los voltajes son nominales y pueden variar hasta 10% en componentes en funcionamiento. Las lecturas de los voltajes pueden variar por la potencia de la señal y el contenido de la imagen.
   - Las fuentes de voltajes son nominales.
2. El símbolo indica el tipo de tierra que se utiliza en la conexión del medidor.

PRECAUCION: SI no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.

MEDICIÓN DE FORMAS DE ONDA

1. Un símbolo como (3) indica el punto para medir una señal. (La medición puede hacerse en el punto con mayor accesibilidad, siempre que sea común al indicado.)
2. Se midieron utilizando un generador con formato NTSC conectado a la terminal de la antena. (Patrón de 8 Barras de Colores EAI, formato NTSC de 100 IREs para el Blanco y 7.5 IREs para el Negro.)
3. Los ajustes de usuario de los Menus PICTURE y AUDIO se normalizaron. Posteriormente el nivel de volumen se ajusta al mínimo.
4. Las formas de onda de Video y Color fueron tomadas con un osciloscopio de banda alta y con un punta de prueba de baja capacitancia (10 a 1). La forma y amplitud de las ondas puede variar según el tipo de osciloscopio que se utilice y sus características.
5. El símbolo de tierra que aparece junto al número de la forma de onda, indica que se utiliza conexión a **Tierra Caliente** en el extremo negativo de la punta de prueba.

PRECAUCION: Si no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.

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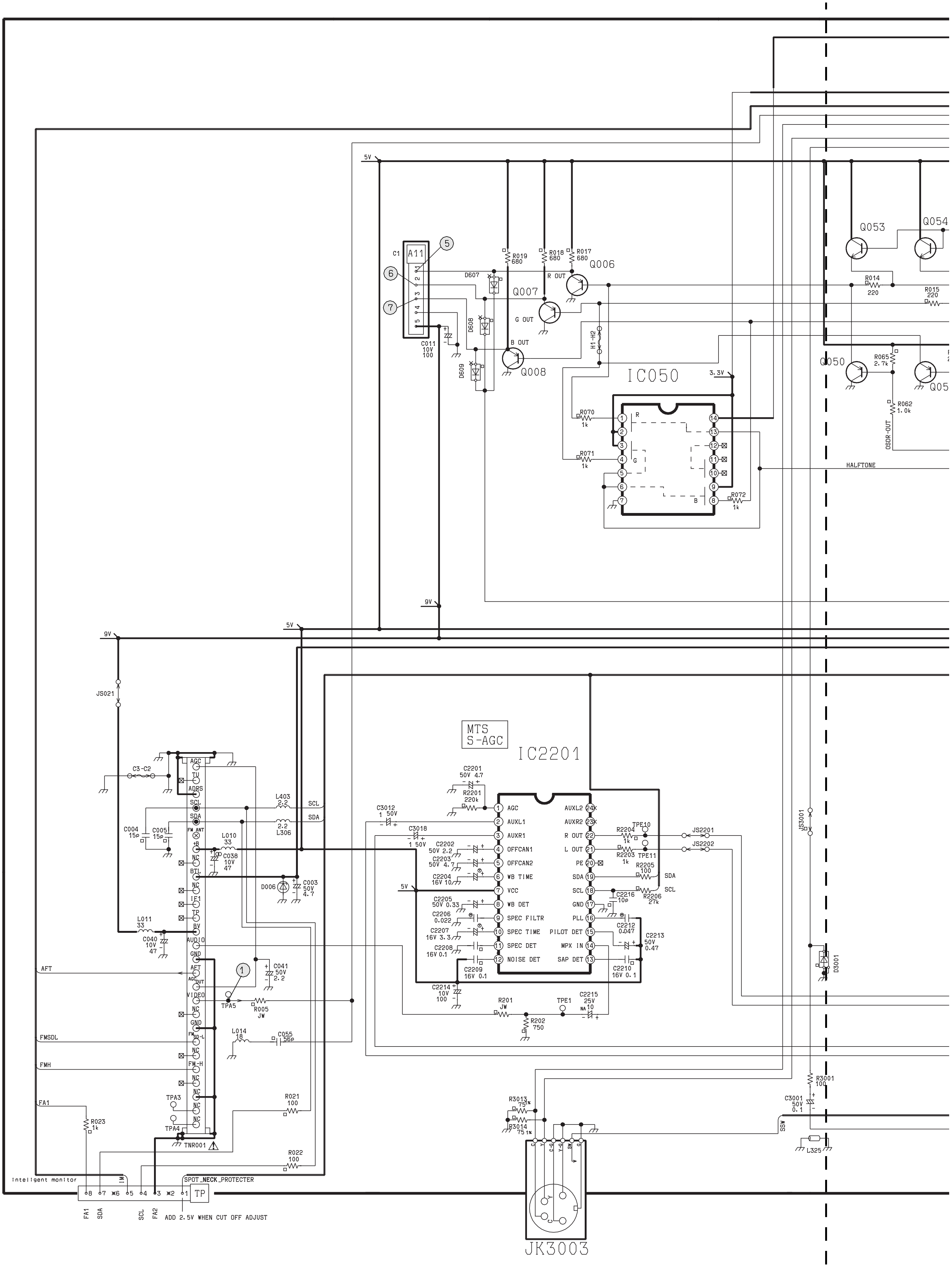

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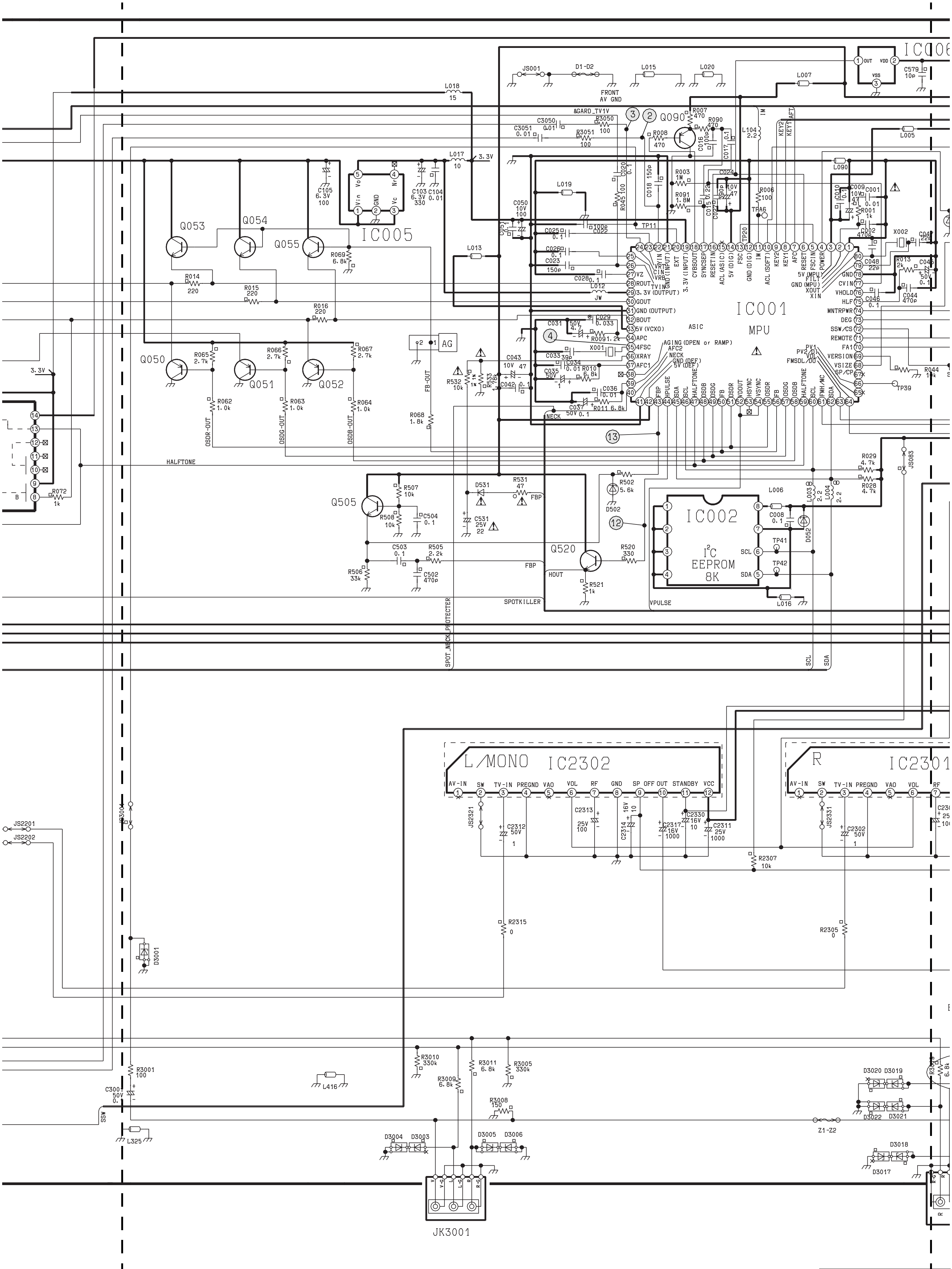

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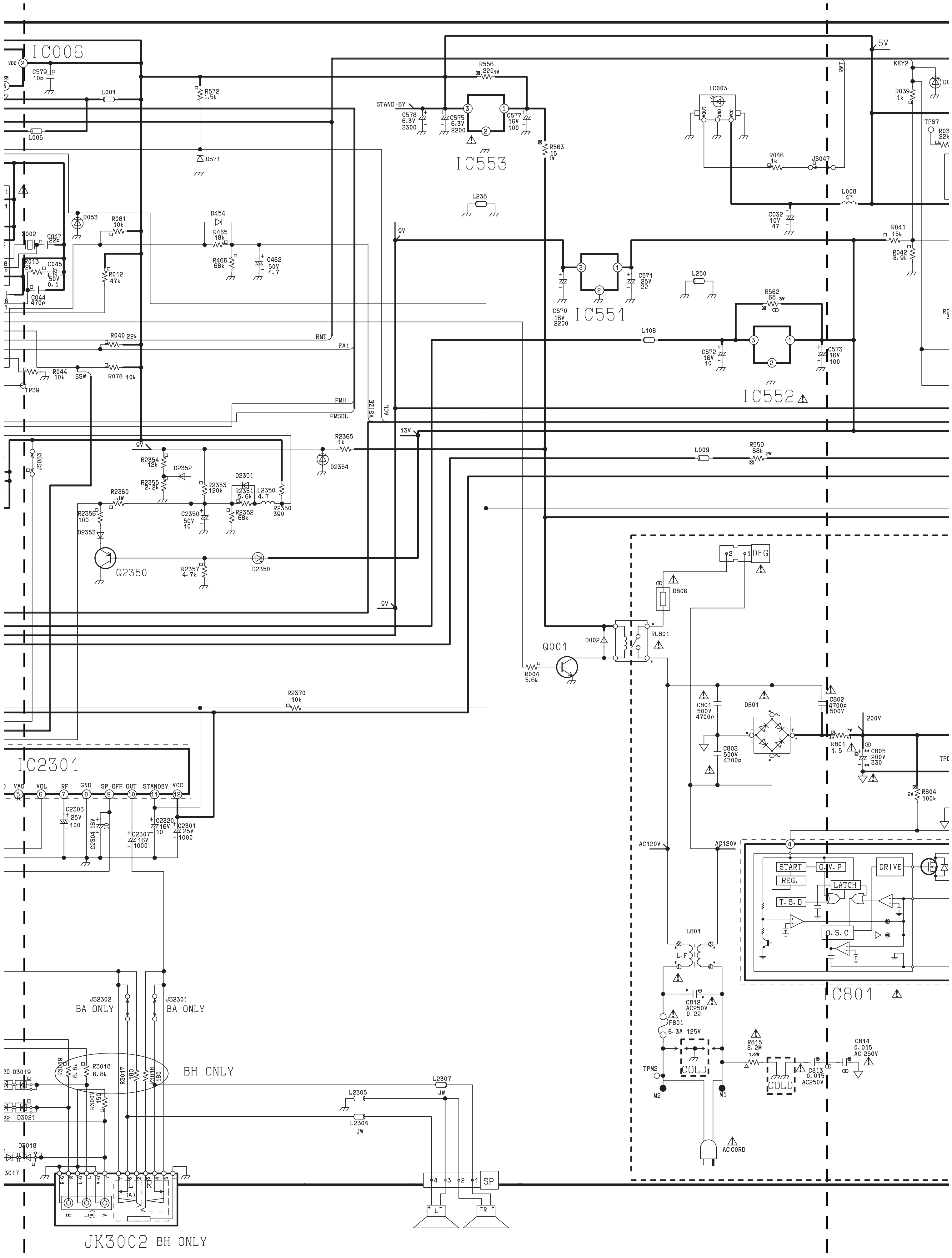

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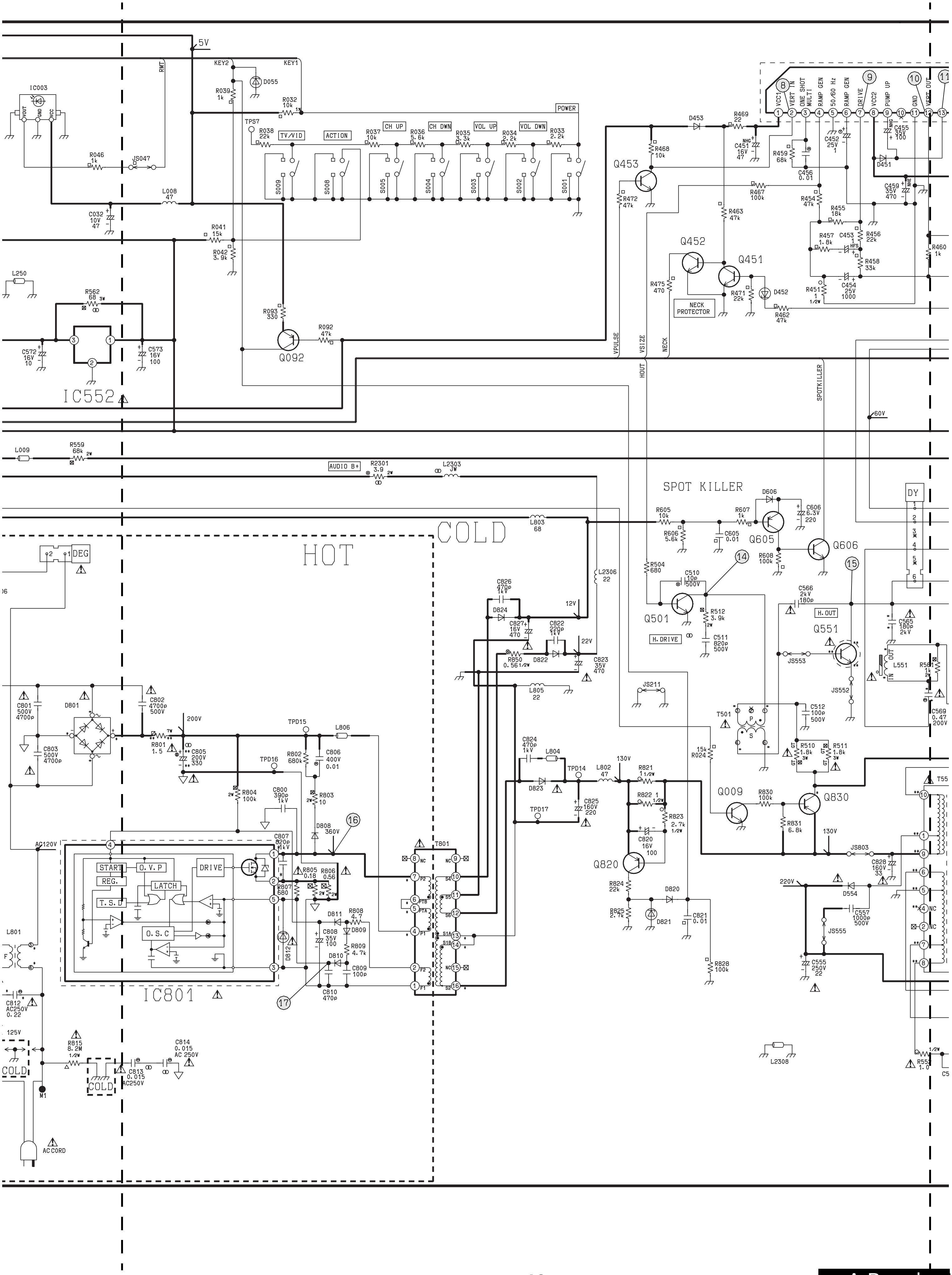

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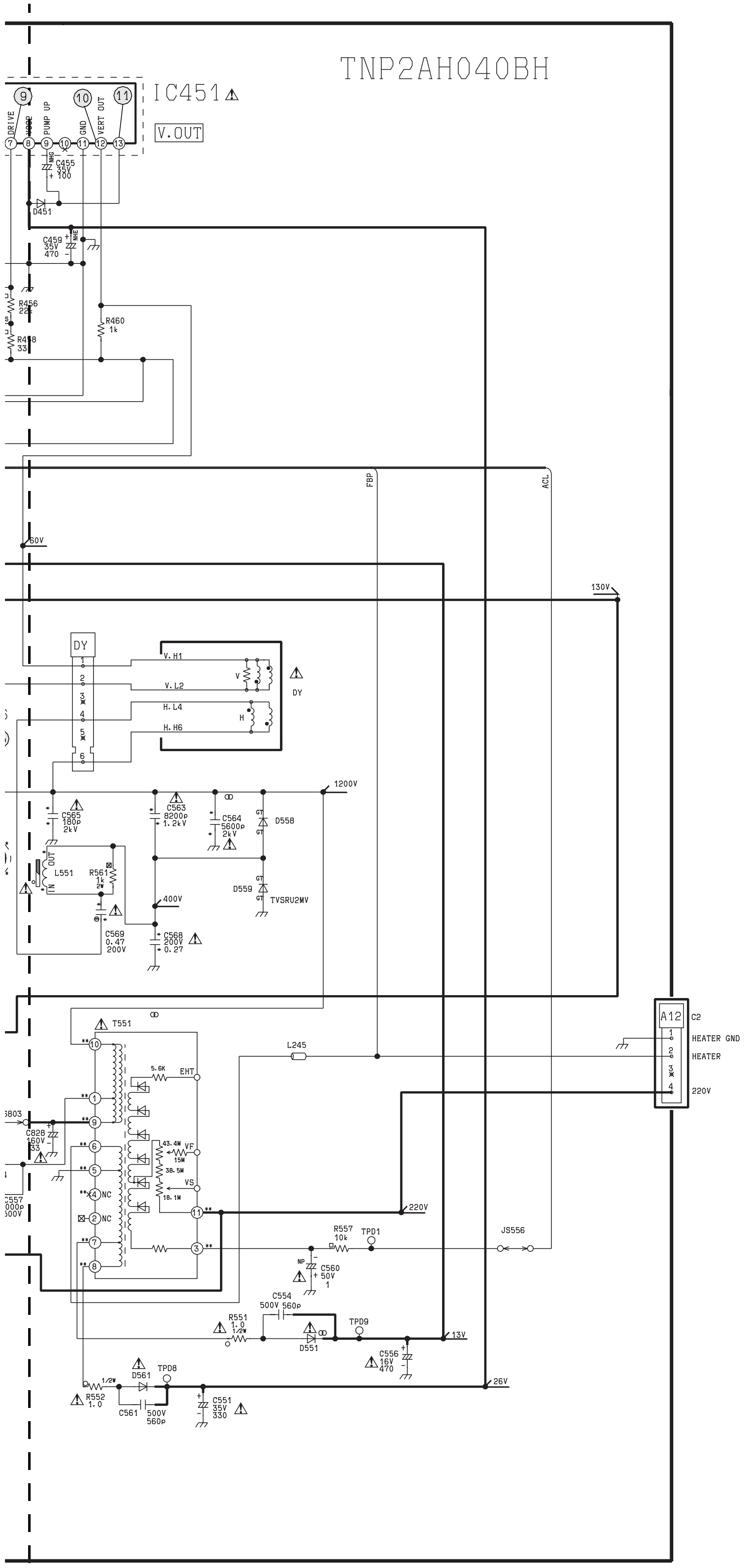

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A-Board IC voltages TNP2AH040BH

IC001

Pin	V	Pin	V
1	2.50	41	0.00
2	1.19	42	4.98
3	4.98	43	2.30
4	4.92	44	1.75
5	2.50	45	3.71
6	*4.99	46	3.70
7	1.85	47	0.05
8	4.99	48	4.98
9	2.83	49	4.98
10	2.81	50	0.04
11	4.95	51	4.98
12	2.95	52	0.18
13	2.49	53	0.47
14	4.98	54	0.17
15	2.48	55	4.98
16	*5.00	56	0.07
17	2.50	57	4.98
18	1.42	58	4.98
19	3.32	59	0.05
20	0.00	60	3.70
21	0.00	61	0.05
22	0.52	62	3.79
23	1.71	63	0.00
24	1.09	64	0.42
25	0.45	65	0.04
26	1.02	66	0.05
27	2.04	67	0.02
28	2.66	68	1.06
29	3.29	69	0.00
30	2.72	70	4.98
31	0.00	71	0.03
32	2.73	72	4.99
33	4.98	73	0.03
34	2.79	74	4.97
35	2.40	75	2.04
36	2.67	76	0.19
37	2.36	77	2.16
38	0.00	78	0.00
39	0.00	79	2.18
40	0.00	80	2.17

IC002

Pin	V
1	0.00
2	0.00
3	0.00
4	0.00
5	3.75
6	3.70
7	0.00
8	4.99

IC003

Pin	V
1	*4.93
2	0.00
3	4.99

IC005

Pin	V
1	5.00
2	0.00
3	5.00
4	1.28
5	3.30

IC006

Pin	V
1	4.99
2	4.98
3	0.00

IC050

Pin	V
1	2.67
2	3.23
3	3.24
4	2.73
5	45.90
6	45.90
7	0.00
8	2.74
9	3.23
10	0.00
11	0.00
12	0.00
13	45.50
14	4.99

IC451

Pin	V
1	8.22
2	8.66
3	4.10
4	4.15
5	-0.89
6	4.12
7	3.81
8	27.27
9	2.74
10	1.28
11	-0.83
12	15.28
13	28.11

IC551

Pin	V
1	14.00
2	8.95
3	0.00

IC552

Pin	V
1	14.00
2	0.00
3	5.03

IC553

Pin	V
1	9.42
2	0.00
3	5.00

IC801 ⏚

Pin	V
1	-0.03
2	0.12
3	0.00
4	32.19
5	1.78

IC2201

Pin	V
1	1.29
2	2.19
3	2.19
4	2.29
5	2.18
6	2.76
7	5.02
8	2.36
9	2.43
10	0.00
11	2.23
12	3.30
13	3.49
14	2.18
15	3.45
16	3.56
17	0.00
18	3.65
19	3.78
20	-0.07
21	2.21
22	2.23
23	2.19
24	2.18

IC2301

Pin	V
1	13.40
2	0.00
3	13.48
4	0.00
5	9.74
6	0.75
7	16.89
8	0.00
9	4.97
10	8.96
11	3.05
12	18.69

IC2302

Pin	V
1	13.42
2	0.00
3	13.46
4	0.00
5	9.75
6	0.75
7	16.87
8	0.00
9	4.97
10	8.93
11	3.04
12	18.70

* TV may shut down

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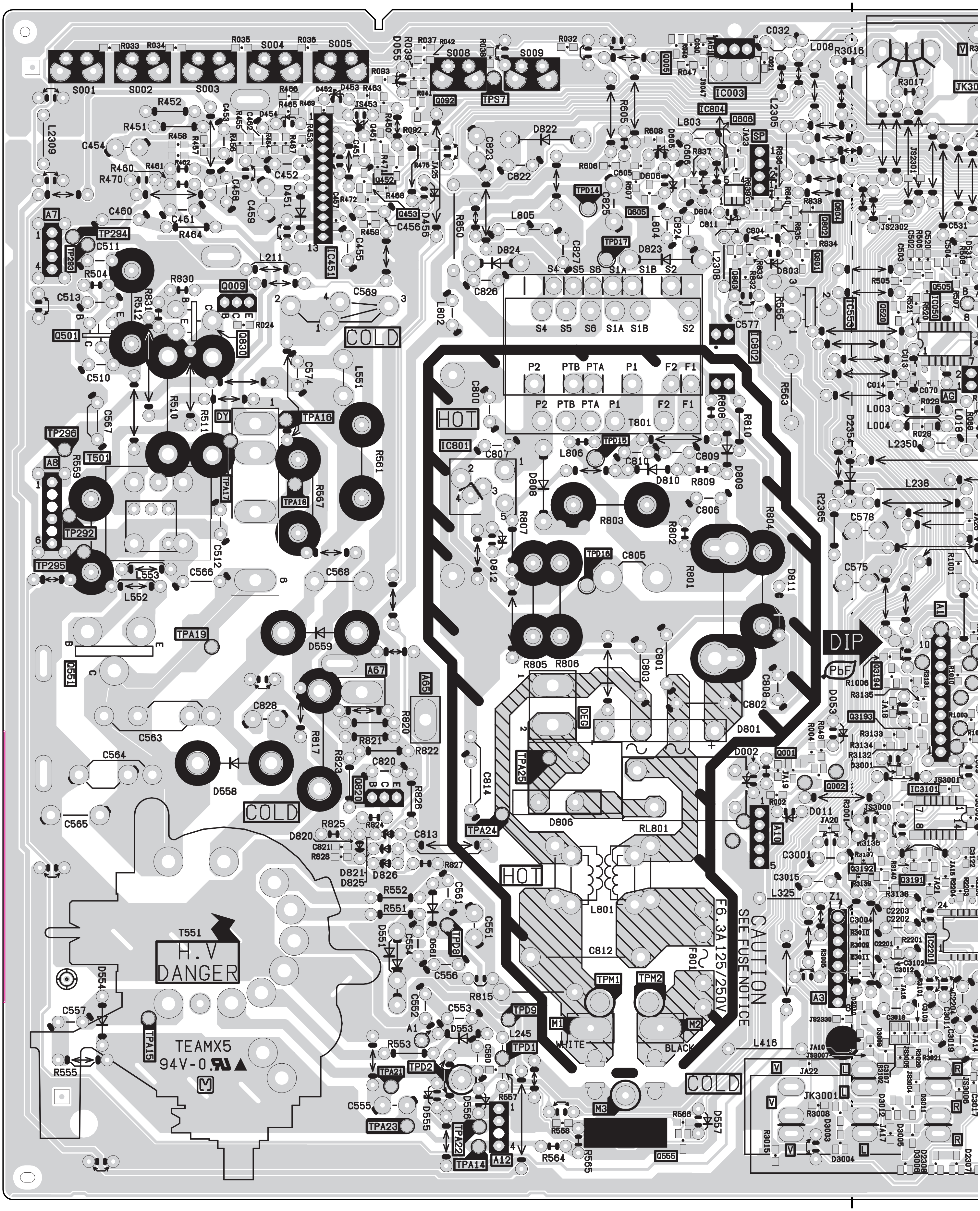

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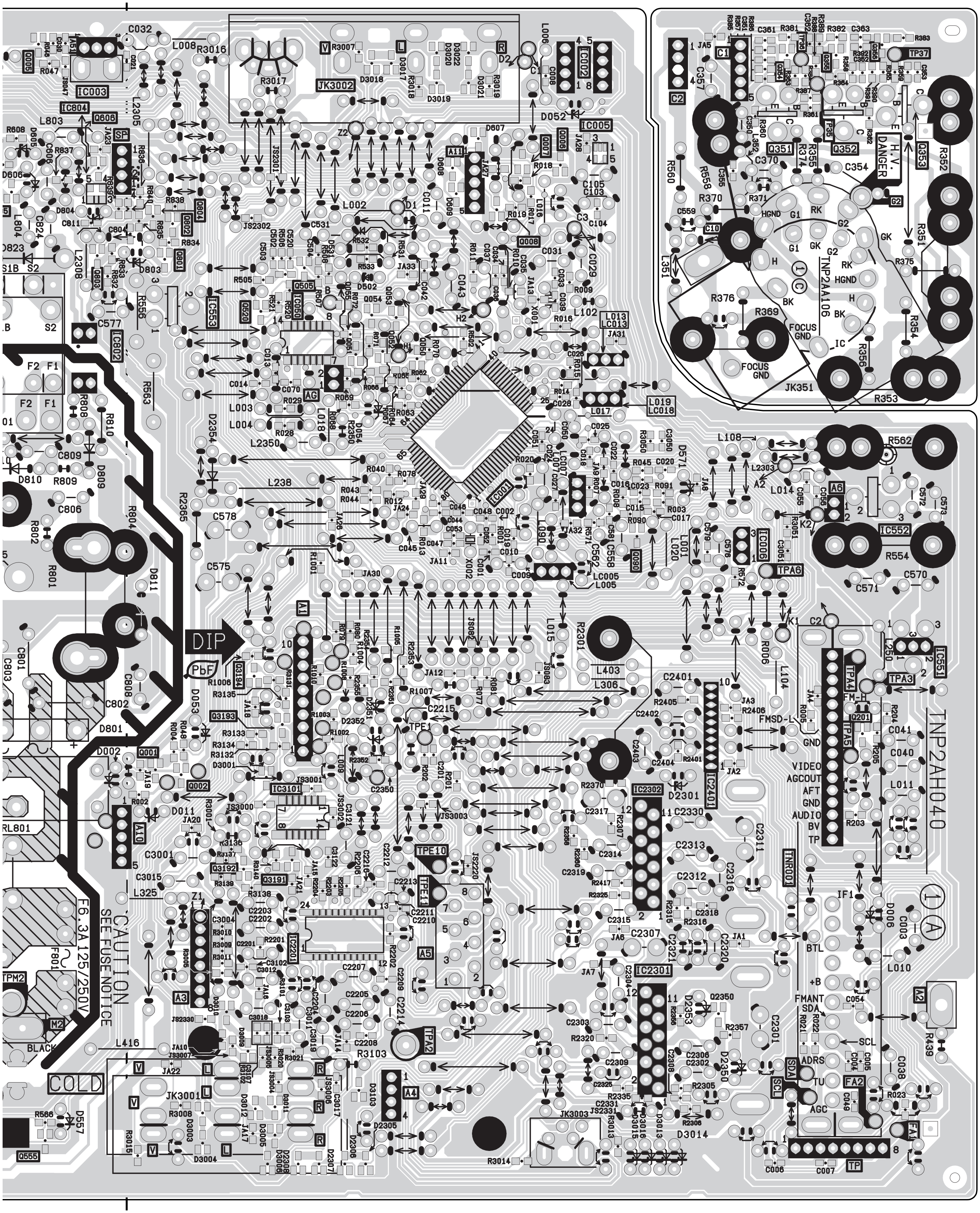

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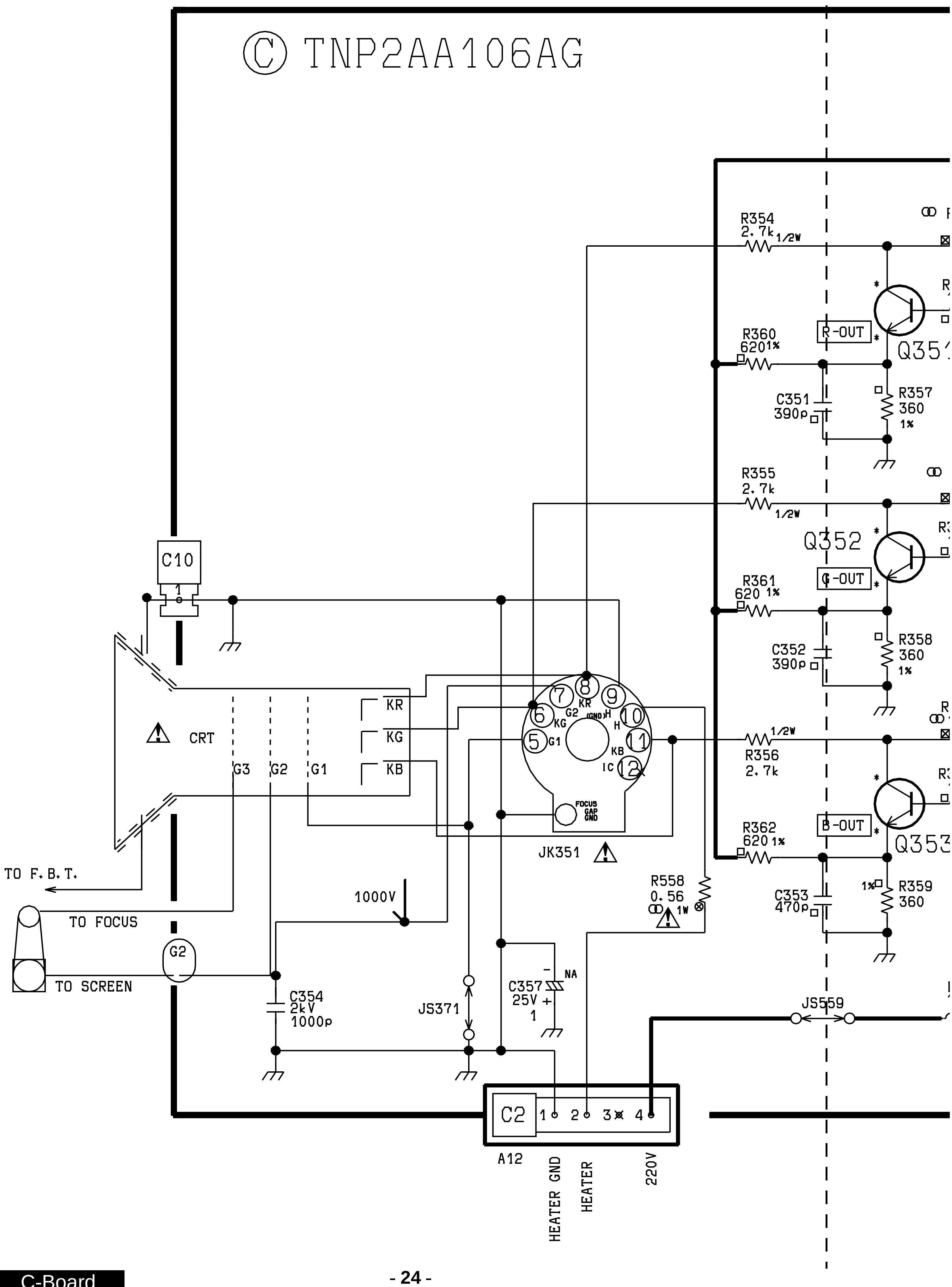

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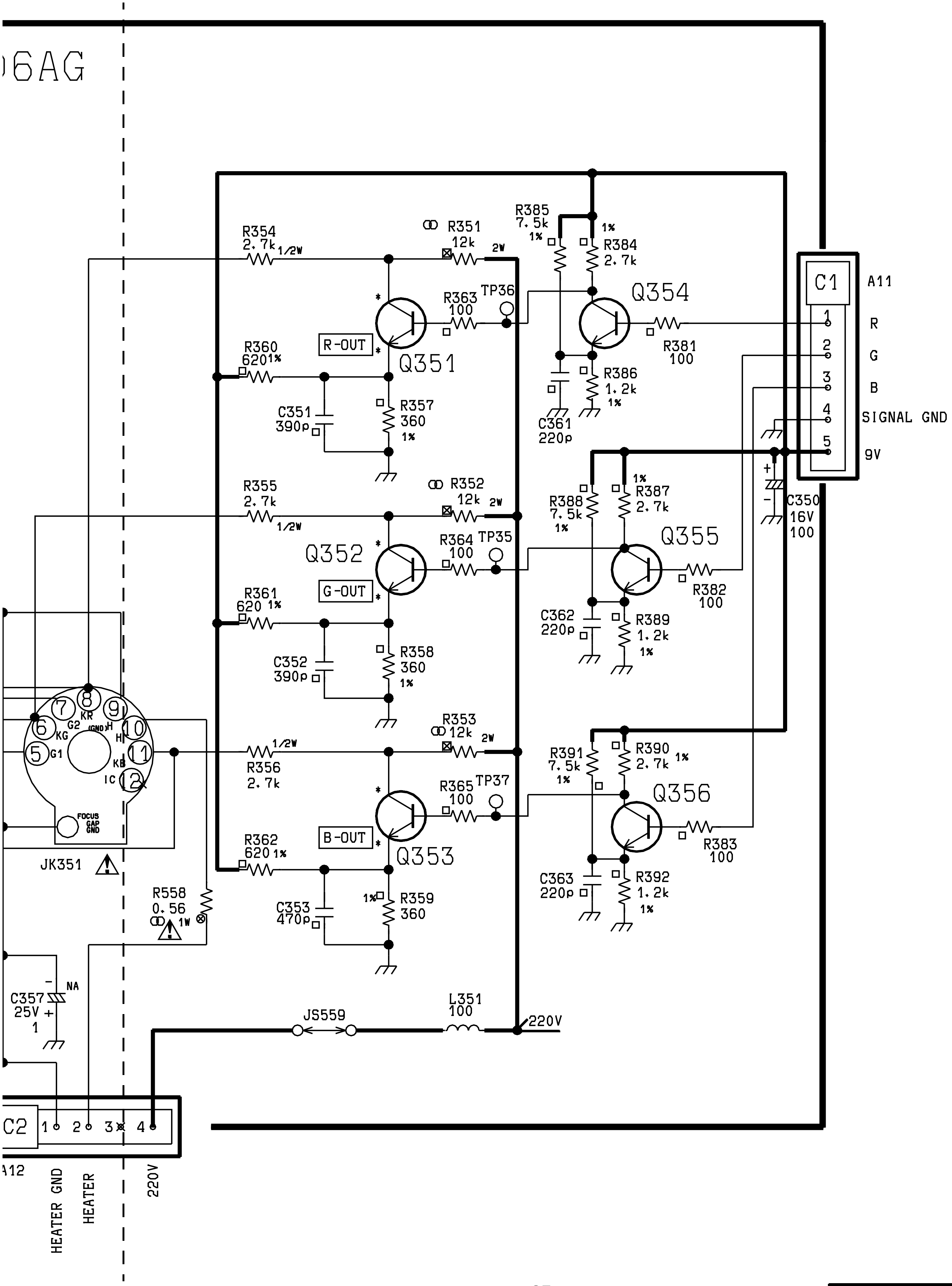

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A-Board transistor voltagesTNP2AH040BH

	Q2350	Q090	Q006	Q007	Q008	Q051
B	7.24	1.44	2.67	2.72	2.74	5.00
C	0.00	0.00	0.00	0.00	0.00	0.00
E	0.72	2.12	3.32	3.36	3.39	2.67

	Q052	Q053	Q054	Q055	Q050	Q505
B	5.00	0.00	0.00	0.00	5.00	2.44
C	0.00	5.00	5.00	5.00	0.00	4.98
E	2.74	2.67	2.72	2.74	2.72	2.30

	Q520	Q001	Q606	Q092	Q451	Q453
B	1.74	0.034	0.00	9.00	0.59	0.00
C	4.98	11.73	3.63	2.82	0.00	8.65
E	1.58	0.00	0.00	5.00	0.00	0.00

	Q009	Q830	Q501	Q820	Q551	Q452
B	0.55	129.5	0.40	130.1	-0.12	0.00
C	0.04	126.3	84.40	0.00	-31.37	2.49
E	0.00	130.1	0.00	130.5	0.00	0.00

	Q605
B	4.23
C	0.00
E	4.21

C-Board transistor voltages TNP2AA106AG

	Q351	Q352	Q353	Q354	Q355	Q356
B	6.49	6.35	6.34	3.32	3.36	3.38
C	165.00	169.70	168.50	6.49	6.35	6.34
E	6.03	5.89	5.93	2.75	2.79	2.81

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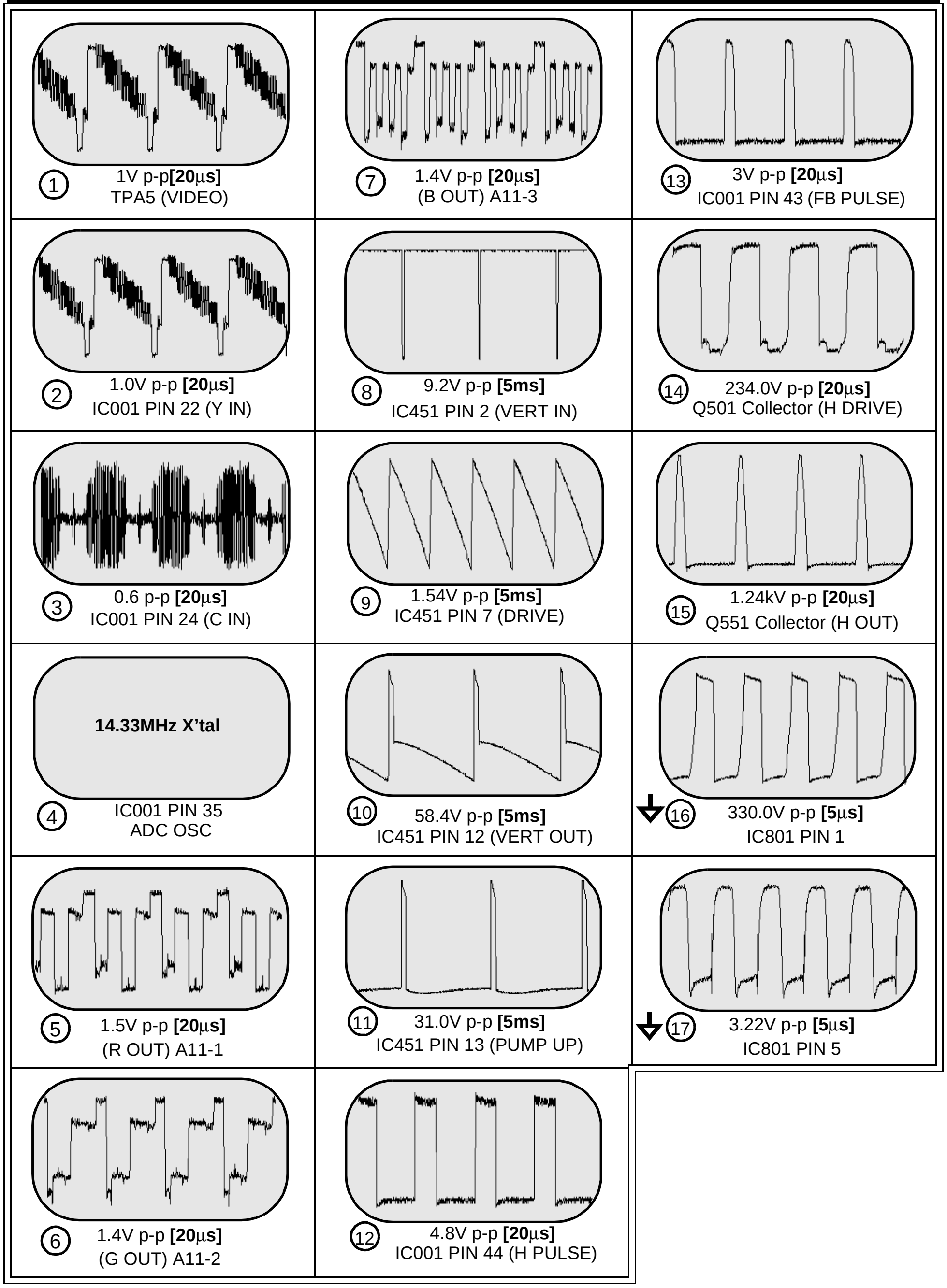
A-BOARD WAVEFORMS -- FORMAS DE ONDA TARJETA-A



* With pattern in S-VHS input

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